Towards a Typology of Virtual Communities of Practice

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Résumé

Les technologies de l’information nous permettent de créer de nouvelles formes d’organisation qui, en se basant sur les principes de décentralisation, de réseautage et de livraison juste-à-temps, transcendent les barrières de temps et d’espace. Suivant cette voie, un nombre croissant de grandes organisations utilise les communautés de pratique virtuelles pour créer et partager les connaissances. La littérature, notamment la presse professionnelle, prodigue moults conseils quant à la façon de former et de développer ces communautés, sans égard à leurs spécificités. Pourtant, une investigation plus détaillée de la littérature montre que les communautés de pratique virtuelles sont loin d’être toutes semblables. À partir d’une revue de la littérature et de l’étude de 18 communautés de pratique virtuelles formées au sein de 14 organisations, nous avons bâti une typologie contenant 21 caractéristiques structurantes. Nous utilisons ensuite cette typologie en prenant pour exemple trois des communautés de pratique virtuelles étudiées, afin de montrer la grande variété qui existe dans la nature même des communautés de pratique virtuelles; nous montrons aussi comment cette variété amène chacune à rencontrer des défis différents. L’adoption d’une vue multidimensionnelle qui repose sur une identification claire et détaillée de la nature des communautés permettra 1) de comparer adéquatement des résultats empiriques, 2) de développer des connaissances cumulatives dans ce domaine de recherche et 3) de fournir des conseils spécifiques et appropriés aux gestionnaires. Nous croyons que les chercheurs et professionnels doivent non seulement reconnaître la diversité qui existe au sein des communautés de pratique virtuelles, mais également identifier des stratégies et pratiques de gestion de ces communautés, et tirer des leçons propres à chaque type de communauté de pratique virtuelle.

Abstract

Information and communication technologies (ICT) have led to the creation of novel forms of organization that can transcend space and time and are based on the ideas of decentralization, networking and just-in-time delivery. Following this trend, a number of large organizations have adopted virtual communities of practice (VCoPs) as a new way to create and share knowledge inside their organizations. The literature, and more specifically the professional press, is packed with “one fits all” advice on how to form, develop and sustain them. A closer look at the literature though shows that VCoPs can have similar, but also very unique “personalities.” Based on an extensive review of the literature and a study of 18 VCoPs formed in 14 organizations, we built a typology containing 21 structuring characteristics. We then used this typology and three of the studied VCoPs to show how different both their basic nature and the challenges they face are. The adoption of this multi-dimensional view of VCoPs allows the adequate comparison of empirical findings, the development of a cumulative tradition in this area of research, and the possibility to provide practitioners with sound and appropriate advice. Researchers and practitioners alike must not only recognize the diversity of possible VCoP arrangements, but also identify strategies and practices and draw lessons that are contingent upon particular VCoP configurations.

Mot-clés : community of practice, virtual community of practice, knowledge management, knowledge network, typology, knowledge sharing, distributed community of practice
1. INTRODUCTION

As shown by both professional studies (Warda & Zieminski, 2000) and academic research (Leonard-Barton, 1995), the capacity to innovate is currently one of the most critical elements in sustaining competitiveness. Researchers working in the field of organizational learning and knowledge management have shown that the process of innovation is widely influenced by the capacity of an organization to share tacit knowledge (Nonaka & Takeuchi, 1995). Communities of practice (CoPs), which are work-related groups who come together to share and to learn from one another (APQC, 2001), are seen as an innovative way to manage knowledge and sustain innovation in organizations (Lesser & Prusak, 1999; Swan et al., 2002). Based on face-to-face meetings, CoPs have existed for centuries (Wenger et al., 2002). The recent interest in CoPs, however, is encouraged by the possibility of taking this relatively old concept into the third millennium. Within global organizations and emerging forms of organizations, holding face-to-face interactions on a regular basis is costly and time-consuming. Since information and communication technologies (ICT) can transcend space and time, organizations are increasingly interested in using them to support CoPs. Virtual communities of practice (VCoPs), without excluding face-to-face meetings, rely primarily on ICT to connect their members. They are widely used as a knowledge management tool in a number of multinational corporations where they are now the norm rather than the exception (Ardichvili et al., 2003; Wenger et al., 2002).

It is now believed that organizations play a critical role in nurturing these communities (Swan et al., 2002; Wenger & Snyder, 2000) or in “structuring spontaneity” (Brown & Duguid, 2001). The literature, and more specifically the professional press, is packed with “one fits all” advice for organizations interested in forming, developing and sustaining CoPs and VCoPs. This literature tends to assume that all communities are similar, the concepts of CoPs and VCoPs being usually treated as one-dimensional constructs. But in order to nurture them to their full potential, organizations must understand what they are (Wenger & Snyder, 2000). A closer look at existing VCoPs clearly reveals that, while they may share some common features, their various structuring characteristics, such as age and geographic dispersion, make them unique. Moreover, as shown by the configurational school in management (Miller & Whitney, 1999), within a particular context, different structuring characteristics or configurations of characteristics may be more or less conducive to success.

In our view, a preliminary but necessary step is to investigate the multi-faceted nature of VCoPs. Thus, the main purpose of this paper is to build a typology that will include the key structuring characteristics required to differentiate among different types or configurations of VCoPs. We believe such groundwork will allow for a deeper understanding of this novel form of knowledge management. This typology should allow to 1) accumulate knowledge on various types of VCoPs, 2) make better sense of empirical findings by considering the intrinsic characteristics of the VCOPs under study and, 3) provide practitioners with a useful framework to effectively understand and manage VCoPs.

2. FROM COPs TO VCOPs

A community of practice is a group “of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger et al., 2002, p.4). Instead of having one-on-one interactions, members open up to the whole community to make everybody benefit from their own issues and
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expertise. While a community may have any common interest, a community of practice is work-related, focusing on a professional activity, a skill, or a topic (McDermott, 2000a).

Since information and communication technologies can transcend space and time, it has been suggested that they be used to support CoPs. A CoP is called “virtual” when its members use ICT as their primary mode of interaction. A virtual community of practice (VCoP) is also called distributed (Wenger et al., 2002), computer-mediated (Etzioni & Etzioni, 1999), on-line (Cothrel & Williams, 1999), or electronic (Wasko & Faraj, 2000). Being virtual does not exclude the use of face-to-face meetings; they have been shown to help build relationships and trust among members, and most VCoPs use them on a more or less regular basis (Storck & Hill, 2000). Several factors, such as geographical dispersion and busy schedules, however, make communicating through ICT more efficient. A VCoP may use a large array of traditional media (phone, teleconference, fax, etc.) and more or less sophisticated technological tools, such as e-mail, videconference, newsgroup, on-line meeting spaces, common databases, Website, intranet (see Wenger, 2001) to establish a collaborative environment and support its members’ interactions.

This study looks specifically at VCoPs. While sharing some similarities, VCoPs differ from CoPs because of their technological component; CoPs’ and VCoPs’ members experience different realities that are better studied separately. What’s more, VCoPs are likely to face additional challenges. Building mutual knowledge, trust among members, and the sense of belonging, which all increase the likelihood of comprehension and open exchange and sharing, may be more difficult through computer-mediated interactions (Cramton, 2001; Hildreth et al., 2000). Distance may make it harder to remember that a VCoP exists (Wenger et al., 2002). Lack of comfort with ICT may require training and on-going technical support strategies. As is, the role of CoP leader is rather new and unknown, furthermore the VCoP leader may have to develop an additional set of skills to play his role in a virtual environment. Despite these important differences, CoPs and VCoPs often go undifferentiated in the literature; the specific ICT challenges are ignored. Therefore, despite the increasing number of organizations using VCoPs, little is known about how to accompany them on the road to success (Ardichvili et al., 2003).

3. A TYPOLOGY OF VIRTUAL COMMUNITIES OF PRACTICE

As briefly mentioned before, the literature generally tends to treat the phenomena of CoPs and VCoPs as one-dimensional constructs. All VCoPs are generally considered similar, with undistinguishing features and undifferentiated identities. Some rare papers have tried to investigate the unique features of CoPs. For example, CoPs have been distinguished based on their initial purpose (ex. APCQ, 2001) or their stage of development (Gongla & Rizzuto, 2001). Wenger et al. (2002, chapter 2), however, seem to be the first to acknowledge that CoPs can take several forms: they identified size, life span, geographic dispersion, boundary span, creation process, and degree of institutionalized formalism as important characteristics whose combination form different types of CoPs. While this initial list is a useful beginning, 1) a quick look at the literature shows that it is not exhaustive and does not allow the complete differentiation among CoPs, 2) this list was created to distinguish among CoPs and does not take into consideration the specific characteristics introduced by ICT into VCoPs, and 3) Wenger et al. fall short of demonstrating empirically the importance of these characteristics to the CoPs’ daily life.
We believe that a finer understanding of VCoPs rests on a detailed comprehension of what they are. While they all have to correspond to the basic definition of a VCoP, therefore sharing some common characteristics, the CoPs and VCoPs presented in the literature and in our study have very unique personalities. Their basic identity can be defined by a series of characteristics. The term “structuring characteristics” refers to the rather stable elements of a VCoP, i.e., the elements that could be used to describe a VCoP if one wanted to take its picture at one point in time. Most of these are settled at the launching of the VCoP and are stable throughout its life. These characteristics define what the VCoP is and shape its life and future. While some will positively influence the VCoP’s life, others will create challenges that will need to be acted upon. The identification of these structuring characteristics is therefore a necessary condition to the successful management of VCoPs. These structuring characteristics are distinct from management decisions and actions that are taken to control and/or counteract the negative effects of some structuring characteristics. For example, allocating direct resources (e.g., money) or selecting the best employee to be the VCoP leader are management decisions in response to challenges faced by a VCoP and can change on a daily basis (budgets can be cut, and a leader can be replaced or can quit). Only two structuring characteristics, age and level of maturity, will change without any intervention. As time goes by, the VCoP will naturally age; the passage of time, however, does not necessarily guarantee a higher level of maturity. A bad mix of structuring characteristics coupled with a lack of intervention from the organization may impede the progress of a VCoP towards a higher level of maturity.

To build this typology, we adopted a two-step methodology. First, an extensive review of conceptual and empirical papers was performed to identify the structuring characteristics of CoPs and VCoPs that were described in the literature. In order to identify all the relevant literature, we first used the CEFRIIO research center’s knowledge management article database, which is updated on a monthly basis. In addition, we conducted a literature search using ABI/Inform and Emerald Fulltext Library databases. We focused on papers discussing CoPs or VCoPs built in organizations for information sharing/building purposes. We did not include papers on communities at large (society) or on-line marketing communities (e.g., an Internet user support group) since their nature and objectives are very different from our object of interest. We also included in this search the main books on the topic and, since the literature on VCoPs is rather scarce, also browsed through some articles about virtual teams that could help us define the virtual distinctiveness of a VCoP.

Following the identification and gathering of all the relevant literature, we read each article and book and systematically extracted all the features of VCoPs that we considered “structuring characteristics,” as defined earlier. Characteristics were retained if they: 1) were mentioned at least once in the literature, and 2) were “structuring” in essence, i.e., could be used to describe the VCoP’s shape and form. Extensive discussion among the authors helped resolve any initial disagreements relative to the retained characteristics, although at that stage, the decision was made to include more rather than less characteristics.

As a second step, data was collected from 18 VCoPs implemented in 14 different organizations. This study is part of a larger research project managed by the CEFRIIO research center and conducted by a multidisciplinary team of researchers. This action research project aimed at better understanding new forms of collaboration using ICT, such as virtual communities of practice. Throughout the project, a thorough follow-up of all VCoPs’ activities was performed and measures were taken at different points in time (mainly through interviews, questionnaires and
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focus groups). In addition, feedback was constantly offered to the VCoPs and their organizations. The methodology used in the larger research project is described in detail in Dubé et al. (2003).

Mainly three data collection sources were used for the part of the study reported here. First, when an organization expressed an interest in being part of the project, an initial document was created. This document recorded the basic information on the community to be formed, such as the general objectives, the names of the community sponsor, leader and participants, the technology that would be used, the challenges that were likely to be faced, etc. The writing of this document was the first step of a rigorous logging process. A member of the research team was responsible for filing a detailed history of all cases from the very beginning, which was the second source of data. This research assistant called the VCoP coaches on a regular basis to keep abreast of any new developments. The coaches also called her to report any new critical incidents. All this information was rigorously recorded. Finally, three focus groups were conducted by members of the research team; one included the VCoP leaders, the second one, a sample of participants, and a third one was conducted with all the coaches. These discussions were tape-recorded and transcribed.

We used the list extracted from the literature to classify the 18 VCoPs. We compared and contrasted the VCoPs from our data set to see how similar and different they were. Comparing the studied VCoPs with our initial list of structuring characteristics allowed us 1) to identify redundancies in our list (e.g., stage of development was redundant with level of maturity); 2) to clarify characteristics that were too broad or unclear (e.g., we separated members’ selection into two characteristics: members’ selection process and membership stability); and 3) to add one characteristic, namely ICT availability.

These steps helped us select the 21 most meaningful structuring characteristics. Table 1 shows the resulting typology. It is divided into four categories. The first category, demographics, includes the overall orientation, life span, age and maturity level of the VCoP. The second category consists of elements of the organizational context, namely the creation process, the level of boundary crossing, the environment, the organizational slack, the degree of institutionalized formalism, and the structure of leadership. The third category focuses on the members: size, geographic dispersion, membership stability, members’ enrollment and selection process, their prior community experience, level of ICT literacy, cultural diversity and the topic’s relevance to them. Finally, technological environment includes the VCoP’s overall degree of reliance on ICT and the variety of ICT available to the VCoP’s members. The closer a VCoP is to the right-hand side of each continuum, the more complex the community is, and the more challenges it may face during its life. While many of these characteristics could be used to describe both CoPs and VCoPs, some are exclusive to the latter. A definition of each structuring characteristic and its possible impacts on the future of the community follows.

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2 A member of the research team in charge of the day-to-day interactions with a specific organization and VCoP’s leader
Table 1 – Typology of VCOPs’ Structuring Characteristics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Operational</th>
<th>Strategic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Span</td>
<td>Temporary</td>
<td>Permanent</td>
</tr>
<tr>
<td>Age</td>
<td>Old</td>
<td>Young</td>
</tr>
<tr>
<td>Level of Maturity</td>
<td>Transformation Stage</td>
<td>Potential stage</td>
</tr>
<tr>
<td>Creation Process</td>
<td>Spontaneous</td>
<td>Intentional</td>
</tr>
<tr>
<td>Boundary Crossing</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Environment</td>
<td>Facilitating</td>
<td>Obstructive</td>
</tr>
<tr>
<td>Organizational Slack</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Degree of Institutionalized Formalism</td>
<td>Unrecognized</td>
<td>Institutionalized</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organizational Context</th>
<th>Facilitating</th>
<th>Obstructive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>Small</td>
<td>Large</td>
</tr>
<tr>
<td>Geographic Dispersion</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Members’ Selection Process</td>
<td>Closed</td>
<td>Open</td>
</tr>
<tr>
<td>Members’ Enrollment</td>
<td>Voluntary</td>
<td>Compulsory</td>
</tr>
<tr>
<td>Members’ Prior Community Experience</td>
<td>Extensive</td>
<td>None</td>
</tr>
<tr>
<td>Membership Stability</td>
<td>Stable</td>
<td>Fluid</td>
</tr>
<tr>
<td>Members’ ICT Literacy</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Cultural Diversity (same profession, language, vision)</td>
<td>Homogeneous</td>
<td>Heterogeneous</td>
</tr>
<tr>
<td>Topic’s Relevance to Members</td>
<td>High</td>
<td>Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Membership Characteristics</th>
<th>High</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Reliance on ICT</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>ICT Availability</td>
<td>High Variety</td>
<td>Low Variety</td>
</tr>
</tbody>
</table>

Increasing Level of Complexity
3.1 DEMOGRAPHICS

**Orientation** (operational ↔ strategic)

VCoPs may be created for different purposes; some have strategic implications while others are operational in nature (Denning, 1998). A strategic VCoP is created to support the overall mission and orientation of the organization; such VCoPs are created to shape the organization’s response to an important environmental change or to define new products or segment markets. An operational VCoP, on the other hand, focuses on the daily operations of the organization, such as quick answers to customer problems. Be it strategic or operational, a VCoP has more chance to be launched and successfully developed if its mission is in line with the overall mission of the organization. A strategic VCoP, more likely to encounter high level of uncertainty and fuzziness, faces more challenges, particularly at its very beginning.

**Life Span** (temporary ↔ permanent)

Life span of CoPs varies widely (Wenger et al., 2002). While it may initially be indeterminate, a VCoP can be assembled on a temporary basis to accomplish a specific purpose (e.g., a response to an ad hoc environmental change), but is usually created on a permanent basis with no definite time frame in mind, as an on-going mechanism for information sharing. A temporary VCoP may prove easier since a high level of energy may be invested for a rather short period of time and a narrow focus may help decrease the level of uncertainty surrounding its launching.

**Age** (young ↔ old) and **Level of Maturity** (transformation stage ↔ potential stage)

Age defines the period of time the VCoP had to experiment and to progress and varies from young (less than a year) to old (more than 5 years). While a VCoP faces different challenges throughout its life, we posit that the first steps of its life are the most challenging. Although there may be a correlation, age does not necessarily go hand in hand with maturity level. VCoPs go through different phases throughout their life. Several authors (e.g., Gongla & Rizzuto, 2001; McDermott, 2000b; Wenger et al., 2002) have proposed CoP’s evolution models. They all describe the same process, but differ in terms of the timing of their stages, the elements emphasized, and the vocabulary used. We selected Wenger et al.’s (2002) model (p. 69) because it is the most recent all encompassing one. It is divided in five stages: (1) potential, (2) coalescing, (3) maturing, (4) stewardship, and (5) transformation, as defined in Table 2.
Table 2 – Stages of Community Development (Wenger et al., 2002, p. 69)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potential</td>
<td>A loose network of people joggles with the idea to form a CoP; structure, members, and common interests are identified, selected, and agreed upon.</td>
</tr>
<tr>
<td>Coalescing</td>
<td>The CoP is officially launched. The CoP activities are starting. The main focus is on establishing value.</td>
</tr>
<tr>
<td>Maturing</td>
<td>The CoP develops a stronger sense of itself. While its core practice is better defined, members see gaps and develop new areas of knowledge. The CoP goes from sharing tips to developing a comprehensive body of knowledge. Members know each other; a level of trust has developed.</td>
</tr>
<tr>
<td>Stewardship</td>
<td>The CoP goes through a stage where the biggest challenge is to sustain its momentum.</td>
</tr>
<tr>
<td>Transformation</td>
<td>An event – a major change in practice or work organization, a large influx of new members, a leadership change, or a high decrease in energy level – will trigger the need for renewal. The CoP may start all over again on new basis or simply fade away and die.</td>
</tr>
</tbody>
</table>

While it is expected that a VCoP will progress and reach a higher level of maturity, some VCoPs take more time than others to evolve; they may stall at one phase or progress rapidly to a high level of maturity (Gongla & Rizzuto, 2001; Wenger et al., 2002). Launching a new VCoP is more challenging as assembling people, identifying common interests, choosing technology, developing norms and processes will prove difficult. A VCoP may also face some difficult challenges when, at the end of the cycle, it has to reinvent itself. Identifying the phase a VCoP is in may help explain its specific challenges and issues, and the decisions and actions that are needed to lead it to success.

3.2 ORGANIZATIONAL CONTEXT

Creation Process (spontaneous ↔ intentional)

CoPs have existed for ages, born from people’s spontaneous desire to group, share ideas, help, and be helped (McDermott, 1999). However, as part of a knowledge management strategy, top management may want to launch a CoP; henceforth, a CoP can be deliberately established by management who will define its purpose and select key members (top-down approach) or be spontaneously emerging and created by a number of interested members (bottom-up approach) (Fontaine, 2001). Between these two extremes, management can take charge of a CoP that was first initiated by a handful of interested members, or more or less directly decide to recognize and support an existing information network (Gongla & Rizzuto, 2001; McDermott & O’Dell, 2001; Swan et al., 2002; Wenger & Snyder, 2000). While it is now widely believed that organizations play a critical role in building communities (Brown & Duguid, 2001; Swan et al., 2002), the organizational involvement in a CoP’s life is delicate since a level of autonomy and independence is necessary to break free from conventional organizational wisdom, and innovate.
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(McDermott, 1999). An intentionally created VCoP may encounter more difficulties; fostering and sustaining members’ interest may require greater effort.

**Boundary Crossing** (low ↔ high)

VCoPs are often created to break organizational silos and promote collaboration, learning, and information sharing. Usually based on “practice- and person-based networks” (Pan & Leidner, 2003), their membership commonly crosses boundaries across work groups, organizational units and even organizations (Wenger & Snyder, 2000). Boundary crossing can be considered low if only similar work group members are involved, medium if different groups or units from the same organization are part of the community, and high if members of different organizations are involved in a VCoP (Wenger et al., 2002). A high level of boundary crossing may make it more difficult to develop an adequate level of trust and to buy into the idea of sharing knowledge (Wenger et al., 2002). Uncertainty over what can be shared without damaging one’s own unit may also impede participation.

**Environment** (facilitating ↔ obstructive)

Forces from the larger organizational context in which the CoP exists may shape its very existence, the challenges it faces, and its outcomes (McDermott & O’Dell, 2001). This context includes the economic environment, the culture and subcultures of the organization involved, the management style, and the political context. All these dimensions interact to create an environment that is facilitating, neutral, or obstructive to the creation and development of the CoP (Cothrel & Williams, 1999). In terms of economic environment, CoPs tend to be more active in industries where turbulence and rapid change are common (Cothrel & Williams, 1999), increasing the need for information and knowledge. When assumptions and beliefs are challenged, external knowledge is used as a fuel for experimentation, intense debate is encouraged, and high levels of participation are expected in managing knowledge, which creates an adequate culture to support the creation and distribution of knowledge (De Long & Farey, 2000). Bureaucracies that depend on stability to function may prove incompatible with a somewhat unpredictable knowledge sharing mechanism such as a VCoP. The global evaluation of the environment must therefore consider all opposing forces, especially in a multi-organization environment. The launching of a CoP is more likely to be successful in an organization that designs the CoP in accordance with its culture and its environment (McDermott & O’Dell, 2001).

**Organizational Slack** (high ↔ low)

Managing the implementation of a VCoP implies the management of organizational change and learning. Occurring at the individual, group and organizational levels, learning is the result of a series of complex processes (Marquardt, 1999), which require time and an intensive support system. To be able to successfully sustain VCoPs and to absorb the costs associated with the non-productive phases inherent to the learning curve, an organization must have some form of organizational slack (Romanelli & Tushman, 1994), i.e., the general availability of tangible and intangible resources in the wide-ranging system into which a VCoP is created. A system with a high availability of resources is more likely to promote experimentation and support new VCoPs. When organizational slack is low, VCoPs may receive less support and resources.
The relationship between a CoP and an organization may take several forms (Wenger et al., 2002). The degree of institutionalized formalism relates to the degree to which a CoP has been integrated into the formal structure of an organization. Wenger et al. (2002, p. 28) define the continuum as going from unrecognized (invisible to organization), bootlegged (visible only to a group), legitimized (officially sanctioned), supported (receiving direct resources) to institutionalized (official status and functions). On the one hand, an institutionalized CoP is fully integrated and considered a formal unit of the organization. This is more likely to be encountered by a CoP that has reached a high level of maturity (Gongla & Rizzuto, 2001). On the other hand, an “unrecognized” VCoP has no acknowledged existence in the organization. Going up on the institutionalism continuum provides the CoP with legitimacy and funding (APQC, 2001).

Leadership (clearly assigned ↔ continuously negotiated)

An organization can either create a formal CoP governance structure where individuals are appointed to specific roles (Lesser & Everest, 2001; Gongla & Rizzuto, 2001) or leave roles and authority relationships to emerge through interaction around expertise (Lesser & Storck, 2001). In clearly assigned leadership, roles have been established and assigned to specific people by the VCoP’s members and/or by management. In a continuously negotiated leadership, responsibilities and roles are in a permanent state of flux, negotiated and established as needs are identified. Clearly assigned roles may become increasingly important as the CoP grows in size and importance (Fontaine, 2001). They may lead to engagement and accountability, and help people legitimize time spent working on the VCoP.

3.3 MEMBERSHIP CHARACTERISTICS

Size (small ↔ large)

Size refers to the number of members involved in a VCoP. This number may be small and intimate (only a few people) to very large (more than a thousand people) (Wenger et al., 2002). A CoP is usually constituted of a core group of members who provide intellectual and social leadership (Wenger & Snyder, 2000), and peripheral members, who often get great value from their lurking activity (McDermott, 2000a), but size does matter. A large community is more likely to include people with contingent, diverse, and distributed interest, and social relationships may become ephemeral (Von Krogh, 2002). As a result, it may be more challenging to meet the needs of all members (Mitchell, 2002) and to find valuable information amid the mass of available material (Wasko & Faraj, 2000). In a large CoP, the marginal contribution of each member is lessened and the rational, self-interested individual may choose to free ride (Von Krogh, 2002). Hence, very large CoPs are usually structured in subgroups (by topic or region) to encourage active participation (Wenger et al., 2002).

Geographic Dispersion (low ↔ high)

Geographic dispersion refers to the physical location of the participants. Advances in ICT have made collaborating through time and distance possible (Wenger et al., 2002). Members of a VCoP may all be physically located in the same building (low dispersion) or scattered around the world (high dispersion). Throughout a province or state, the dispersion could be considered to be medium to low and, throughout a large country such as Canada or the USA, the level could be qualified as medium to high. A high level of dispersion brings about additional challenges. Physical distance encourages psychological distance; it takes more intentional effort for
members to participate and from the VCoP leader to keep the community alive (Wenger et al., 2002). In such a context, it also becomes more complicated and expensive for members to participate in regular, face-to-face meetings. High geographic dispersion means that members are in different time zones, making synchronous communications all the more difficult. High geographic dispersion is also likely to increase the cultural diversity of a VCoP.

**Members’ Selection Process** (closed ↔ open)

VCoPs may use different methods to select their members. An on-line CoP may have an open membership whereby anyone can become a member and participate (e.g., an Internet community). This type of VCoP deals most frequently with issues related to customer care; for this specific purpose, anyone can become a member, ask questions, and make recommendations. In our case, a VCoP with an open membership means that anyone in the organization who is interested can become a member. When discussing organizational practices and strategic topics, however, confidentiality is usually an issue. Therefore, a VCoP may choose to have a closed membership and to admit only members who meet a predetermined list of criteria. In addition to having a better control over its size, a closed-membership VCoP has more control over the characteristics of its members, making managing, identifying common interests, and meeting easier. An open-membership VCoP, however, may be more in line with the idea of organization-wide knowledge sharing. In an open-membership VCoP, lurkers may learn interesting things that will prove useful in the long run, while their status, at the time, may not have allowed them to become members, had the VCoP had a closed-membership policy.

**Members’ Enrollment** (voluntary ↔ compulsory)

Members’ enrollment can take many forms, from voluntary to strongly encouraged, to compulsory (APQC, 2001). More generally, potential candidates go through a self-selection process, assessing what they can gain from their participation and what their contributions might be; if the resulting evaluation is positive, they will then volunteer to be part of a community. A member’s participation can also be “strongly” encouraged by management to the point where the potential member does not feel free to turn down the offer. Volunteers are generally more motivated than conscripted members (Deloitte Research, 2001; Mitchell, 2002). Compulsory participation is more likely to be found when management builds the CoP in a top-down approach. A CoP where members are mainly conscripted is likely to encounter legitimacy problems since, although enrollment can be “forced,” monitoring or measuring meaningful participation may prove very difficult. This characteristic is evaluated on a continuum since a CoP may be comprised of a mix of voluntary and drafted members.

**Members’ Prior Community Experience** (extensive ↔ none)

An existing network of individuals may be the instigator of a new CoP (Lesser & Everest, 2001) or management can build on an existing network as a basis for a new CoP (McDermott, 1999). In such a case, members already know each other and are used to collaborating and sharing information among themselves. “A system of cues makes possible a deep improvisation of knowledge sharing, where people send and interpret cues as to when, where, and how knowledge sharing is appropriate” (Von Krogh, 2002, p. 92). Prior community experience may vary from extensive (when the community is based on an existing network), to medium (when members of the community have worked in groups, although those groups may not be identical to the VCoP), to low and none. Moving an existing community from exclusively face-to-face meetings to the virtual world can meet two opposing forces: (1) members may resist the new technological
Towards a Typology of Virtual Communities of Practice
Line Dubé, Anne Bourhis, and Réal Jacob

arrangement and may want to go back to their previous successful way and/or (2) previous community experience may remove the uncertainty faced by the members of a new community, easing the passage from a face-to-face to a virtual environment. Despite possible drawbacks, an experienced group has an advantage over a newly created CoP. While some resistance may be encountered, the group already has a purpose, some legitimacy, established roles and defined norms, easing the passage to the development of a real virtual community.

Membership Stability (stable ↔ fluid)

A VCoP may have permanent members (i.e., a stable membership), but can also have changing membership, ranging from moderately stable to fluid. Through normal organizational turnover, membership may change over time (Storck & Hill, 2000). An open VCoP may experience less stability than a closed one. Stability may also be affected if key actors of the VCoP are replaced by new members. In that particular case, a complete socialization and sense-making process is triggered. The values, norms, and communication patterns of the new member will be confronted with the ones that were adopted by the VCoP. A learning and adaptation process on both sides then occurs and is more or less successful depending on the adaptive capacity of the parties involved. If new members join repeatedly and participate extensively, considerable energy will have to be devoted to this adaptation process. A sudden and important influx of new members can challenge the actual CoP and call for a radical transformation (Wenger et al., 2002).

Members’ ICT Literacy (high ↔ low)

A VCoP exists mainly through ICT-mediated interactions; the characteristics of this technological environment will be discussed in the next sub-section. At the member’s level, however, it is important to consider the level of comfort members feel towards the use of ICT. In a single VCoP, there can be wide discrepancies in the members’ technological proficiency, i.e., in their ability to use the technology efficiently. Some members might be comfortable working with groupware, whiteboards, and videoconferencing, while others might need to be taught how to attach a file to an e-mail message. A lack of experience with ICT may make it difficult for some members to participate to their full potential because of the barriers created by technology. They may even be looked down upon by members who master the technology. These inexperienced members may be afraid to answer general inquiries or to participate in on-line discussions (Deloitte Research, 2001). They may also rely on traditional media such as the phone and the fax instead of more appropriate and sophisticated ICT, perpetuating one-on-one exchanges and potentially depriving others of important information. Thus, while a variety of ICT may be available, members’ ability to use them appropriately and efficiently will facilitate or hinder participation and information sharing. While the level of ICT proficiency is an individual characteristic, a global assessment should be performed on the VCoP as a group. In a case where only a few members are inexperienced ICT users, knowledge transfer and support can easily be obtained from the group. In cases where most members are inexperienced, actions need to be taken for the group to be able to interact efficiently through ICT.

Cultural Diversity (homogeneous ↔ heterogeneous)

When evaluating a CoP, three levels of cultural influence must be considered: national, organizational, and professional (Wenger et al., 2002). First, cultural diversity in a VCoP may be created by mixing different national cultures. Hofstede (1993) shows how different cultures have different conceptualizations of management, leadership, autonomy, priority and focus, decision-making, and relationships between people. Furthermore, a variety of national cultures often

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comes with a diversity of languages, amplifying problems of communication and collaboration, and increasing the likelihood of people resisting participation (Pan & Leidner, 2003). Second, a community of practice may bring together different organizational cultures, with different learning and adaptation processes (Hesselbein & Johnston, 2002) as well as diverse knowledge sharing behaviors, evaluation and compensation systems, employees’ expectations and preferences. The third dimension of culture is the integration of dissimilar professional cultures into a single VCoP. Influenced by education and professional associations, members of a specific professional culture develop their own knowledge bases, language, specialized vocabulary, technical routines, workplace values and norms, and even dress code. Members of different professional groups may thus exhibit differing mutual knowledge, expectations, assumptions and codes (Cramton, 2001).

Given the three levels of cultural influence, cultural diversity is evaluated on a continuum, whereby homogeneous describes a community in which members come either from the same organization or from organizations with similar cultures, are located in culturally close countries, and have similar professional backgrounds. At the other end of the continuum are VCoPs whose members have various professional backgrounds, come from disparate organizations, and are located in dissimilar national cultures. At the middle of this spectrum are VCoPs that may be qualified as displaying a medium cultural diversity.

While cultural heterogeneity is an asset that brings a rich variety of perspectives and experiences and provides a mechanism against groupthink, it can also make participating and sharing difficult (Pan & Leidner, 2003). In addition to shaping how one relates to others and to the group (Wenger et al., 2002), culture defines what knowledge is, what is worth managing, who should possess it, and who should hoard it (De Long & Fahey, 2000). People tend to interpret information based on their cultural filters leading to a potentially broad range of misinterpretations or distortions. Under these circumstances, it may be more challenging for the VCoP’s members to identify and develop common interests and share a common understanding, to establish open communication and trust, delaying the time a VCoP requires to be effective. Norms need to be discussed, shared and negotiated (Wenger et al., 2002), and the VCoP leaders need to understand and manage the cultural tension (Deloitte Research, 2001) in order to change it into a creative energy.

**Topic’s Relevance to Members (high ↔ low)**

VCoPs are usually launched with a defined objective and theme in mind. This topic may be close to the daily work of its members or, on the opposite, be important for the organization, but far away from the members’ day to day preoccupations. It is much simpler to foster a sense of engagement, develop commitment and create and uphold motivation when members focus on problems that are directly related to their work; they can see immediately the benefits of their participation (Wenger & Snyder, 2000). Therefore, a topic should provide value to both the organization and the individuals (McDermott, 1999).

**3.4 TECHNOLOGICAL ENVIRONMENT**

**Degree of Reliance on ICT (low ↔ high)**

ICT allows VCoP members to leverage each other’s knowledge in a timely fashion, without the constraints of time and space (McDermott, 2000a; Von Krogh, 2002). While a VCoP needs to be predominantly using ICT to be called “virtual,” VCoPs may be using technology to different
degrees. One VCoP may use ICT 98% of the time and meet only once a year (high reliance on ICT), while another VCoP may use ICT extensively but meet three to six times a year (medium reliance on ICT), and yet another may meet face-to-face every month (low reliance on ICT).

It is widely accepted that ICT will never be a perfect substitute for face-to-face encounters or meetings (Deloitte Research, 2001). Deprived of rich face-to-face contacts, especially at the beginning, a VCoP may have problems and/or take longer to establish a sense of identity and a common purpose, and to develop the shared knowledge that increases the likelihood of mutual understanding (Cramton, 2001). Most VCoPs need some face-to-face time to be the most effective (Deloitte Research, 2001) and the resulting stronger personal relationships seem to be essential to carry the group through extended periods of virtual communication (Hildreth et al., 2000).

**ICT Availability** (high variety ↔ low variety)

In addition to the traditional media such as the telephone, fax, teleconference and e-mail, VCoPs vary widely in terms of the means that are available to them to interact. ICT can provide virtual spaces where people can meet and discuss synchronously or asynchronously, store documents, hold electronic presentations, etc. A large array of “meeting opportunities” may lead to higher and richer participation. The technology available may also shape the objectives of the VCoP and its adopted processes. A low variety would include a CoP that only has access to simple, one-functionality software; the variety would be qualified as medium in the case of a CoP using both a document management capacity and a discussion forum; on the other hand, a CoP with access to a wide variety of ICT such as synchronous and asynchronous discussions and document management, would be an example of a VCoP with a wide variety of available ICT.

4. THE TYPOLOGY IN ACTION

While it is impossible to formulate specific hypotheses at this early stage of knowledge development in this area, we globally propose that VCoPs having different structuring characteristics or configurations of characteristics face different challenges. From our data, we selected three VCoPs to illustrate how the challenges and dilemmas faced by the members and their leaders differ, and are contingent upon a VCoP’s set of characteristics. A brief description of each VCoP is presented, followed by a discussion of the challenges faced by each.

4.1 VCoP A

VCoP A was created with the intention of offering members a forum to share tacit knowledge, discuss, and build a repertoire of the best practices in their particular domain. Although this organization from the service sector had very little resources and no tradition of tacit knowledge sharing, management was strongly committed to developing and leading this VCoP to success and, hence, when problems were encountered, they were quickly solved. The organization’s intentions were to create this community of practice as a pilot project, evaluate its success and its potential as a tacit knowledge sharing tool, and possibly use this experience to build other communities around other areas of professional expertise. Given this particular orientation, the VCoP was created through a top-down process, and not integrated into the organization’s formal structure.

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3 Names were changed, and details removed to preserve the organizations’ and VCoPs’ anonymity.
Although members of VCoP A were all professionals in the same area of expertise, their levels of experience varied greatly, because they were scattered throughout three states, worked for different employers, with different cultures and operating modes, and held very different positions. All members were volunteers, recruited through a countrywide public search; they did not know each other and had no community experience prior to this project. Due to the members’ geographic dispersion, and to the lack of organizational slack, which made it impossible to support travel expenses, all interactions were conducted through ICT. This was done despite the fact that the members did not have very extensive experience with technology.

4.2 VCoP B

VCoP B was intentionally created by the management of an organization in the private sector. Knowledge management, continuous improvement and workers empowerment are among the values of this organization, creating a facilitating environment for a VCoP. The organization viewed VCoP B as a pilot project intended to evaluate whether such communities were appropriate tools to increase collective learning among people, and to document and share the best practices. Therefore, at the time the research project took place, the community was not integrated into the organizational structure and was thought of as an officially sanctioned experiment with a short life span.

Since most members of VCoP B worked in the same department of the same organization, the boundary crossing level was low. Members were mainly technicians and engineers with different areas of expertise (cultural diversity = medium). Initially, managers recruited motivated volunteers to participate in the community, but they eventually enlarged their recruiting effort to encompass all the production workers and new recruits. Interactions within the VCoP were held mainly through ICT, although members met face-to-face on a regular basis.

4.3 VCoP C

A large public-sector organization with a high level of resources is the home of VCoP C. This community was created by managers to fulfill a clear mandate: share best practices in order 1) to standardize them across decentralized departments, and 2) to make recommendations for improvement. Despite this narrow focus and short life span, VCoP C was clearly established within an organization that strongly supported the move towards knowledge sharing and therefore allocated direct resources to the VCoP. Members of the community were all employees of the organization, although from various departments, with similar backgrounds and areas of specialty. They all worked in different regions of the same state, making geographic dispersion of the community average. Because members had occasionally collaborated before the creation of the community, their level of prior community experience was moderate.

All members were enrolled by their respective department heads, based on their expertise and the topic’s relevance to their daily work. Despite this closed and forced membership, the community sustained a relatively high level of turnover, making the membership unstable. Due to their geographic dispersion, members relied heavily on technology and never met face-to-face.

The classification of these three VCoPs according to our typology is presented in Table 3. In this table, the structuring characteristics that vary from VCoP to VCoP are shaded.
Table 3 – Structuring Characteristics of Selected VCoPs

<table>
<thead>
<tr>
<th>Structuring Characteristics</th>
<th>VCoP A</th>
<th>VCoP B</th>
<th>VCoP C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographics</td>
<td><strong>Orientation</strong></td>
<td><strong>Orientation</strong></td>
<td><strong>Orientation</strong></td>
</tr>
<tr>
<td></td>
<td>Operational</td>
<td>Operational</td>
<td>Operational</td>
</tr>
<tr>
<td></td>
<td><em>To share and build a repertoire of best practices in one specific area.</em></td>
<td><em>To share and document best practices.</em></td>
<td><em>To share best practices and make recommendations to improve them.</em></td>
</tr>
<tr>
<td>Life Span</td>
<td>Temporary</td>
<td>Temporary</td>
<td>Temporary</td>
</tr>
<tr>
<td></td>
<td><em>The VCoP is a pilot project intended to produce, through intensive expertise sharing, a specific deliverable at the end of a 6-month period.</em></td>
<td><em>The VCoP is a pilot project intended to evaluate whether VCoPs are appropriate tools for this organization to increase collective learning.</em></td>
<td><em>The VCoP has a clear mandate, and there is no indication that it will pursue its activities after the completion of its mandate.</em></td>
</tr>
<tr>
<td>Age</td>
<td>Young</td>
<td>Young</td>
<td>Young</td>
</tr>
<tr>
<td></td>
<td><em>As planned, stopped after 6 months.</em></td>
<td><em>The VCoP was created in the past 12 months.</em></td>
<td><em>The VCoP was created in the past 12 months.</em></td>
</tr>
<tr>
<td>Level of Maturity</td>
<td><strong>Transformation Stage - Death</strong></td>
<td><strong>Maturing stage</strong></td>
<td><strong>Stewardship</strong></td>
</tr>
<tr>
<td></td>
<td><em>This VCoP reached full maturity and fulfilled its objectives in the scheduled period. A limited budget forced its premature death.</em></td>
<td><em>Delays in the organization's calendar did not allow this VCoP to reach full speed, but decisions regarding objectives and membership were made.</em></td>
<td><em>This VCoP reached a satisfactory cruising speed and now has to find ways to sustain its momentum.</em></td>
</tr>
<tr>
<td>Organizational Context</td>
<td><strong>Creation Process</strong></td>
<td><strong>Creation Process</strong></td>
<td><strong>Creation Process</strong></td>
</tr>
<tr>
<td></td>
<td>Intentional, top-down</td>
<td>Intentional, top-down</td>
<td>Intentional, top-down</td>
</tr>
<tr>
<td></td>
<td><em>The VCoP was deliberately established by management. Its overall objectives were defined by management and operationalized by the community leaders and the research team.</em></td>
<td><em>The VCoP was deliberately established by management. Its overall objectives were defined by management and operationalized by the community leaders and the research team.</em></td>
<td><em>The VCoP was deliberately established by management. Its overall objectives were defined by management and operationalized by the community leaders and the research team.</em></td>
</tr>
<tr>
<td>Boundary Crossing</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td><em>Each member of the VCoP works for a different employer.</em></td>
<td><em>All members work for the same employer (which is the organization supporting the VCoP) and in the same department.</em></td>
<td><em>All members work for the same employer, but in different departments.</em></td>
</tr>
</tbody>
</table>
### Table 3 – Structuring Characteristics of Selected VCoPs (cont’d)

<table>
<thead>
<tr>
<th>Organizational Context (cont’d)</th>
<th>Environment</th>
<th>Organizational Slack</th>
<th>Degree of Institutionalized Formalism</th>
<th>Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Facilitating</td>
<td>Low</td>
<td>Supported</td>
<td>Clearly assigned; imposed by management</td>
</tr>
<tr>
<td></td>
<td>Despite a lack of knowledge management culture in this organization, there is a clear commitment to support the VCoP in every possible way.</td>
<td>The VCoP is set in an organization where resources are very tight.</td>
<td>Although the VCoP is not integrated into the organizational formal structure, it receives direct resources from the organization.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitating</td>
<td>Low</td>
<td>Legitimized</td>
<td>Clearly assigned; imposed by management</td>
</tr>
<tr>
<td></td>
<td>Knowledge management and knowledge sharing are among the core values of the organization.</td>
<td>The VCoP is set in an organization with adequate resources. However, most resources are allocated to a highly important and strategic project, therefore limiting the organizational slack to VCoPs.</td>
<td>The VCoP is not integrated into the organizational formal structure and receives few resources; however, it is officially sanctioned by the organization.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Facilitating</td>
<td>High</td>
<td>Supported</td>
<td>Clearly assigned; imposed by management</td>
</tr>
<tr>
<td></td>
<td>The organization is clearly supporting a move towards knowledge sharing. The decisions relative to the VCoP are consistent with its objectives.</td>
<td>The VCoP is set in an organization where a lot of organizational slack is available and allocated to the VCoP project.</td>
<td>Although the VCoP is not integrated into the organization’s formal structure, it receives direct resources from the organization.</td>
<td></td>
</tr>
<tr>
<td>Membership Characteristics</td>
<td>Small</td>
<td>Medium</td>
<td>Supported</td>
<td>Small</td>
</tr>
<tr>
<td></td>
<td>Approximately 35 members.</td>
<td>All members are located in the same country.</td>
<td>30 to 40 members.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Small</td>
<td>Low</td>
<td>Medium-low</td>
<td>All members are located within the same state.</td>
</tr>
<tr>
<td></td>
<td>45 to 50 members.</td>
<td>All members are located in the same place.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Closed membership</td>
<td>Closed membership</td>
<td>Closed membership</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All members were selected at the beginning of the project.</td>
<td>Membership is based on the workers’ job assignments.</td>
<td>Members were selected so as to be representative of different departments.</td>
<td></td>
</tr>
<tr>
<td>Members’ Enrollment</td>
<td>Members’ Prior Community Experience</td>
<td>Membership Stability</td>
<td>Membership Characteristics (cont’d)</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------</td>
<td>----------------------</td>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Voluntary</td>
<td>None</td>
<td>Stable</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>A large countrywide search was organized to recruit volunteers.</td>
<td>The members didn’t know each other and had never interacted before.</td>
<td>There has been no turnover.</td>
<td>Most members don’t use computers in their work, and many of them do not have a computer at home.</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>None</td>
<td>Moderately stable</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Initially, membership was voluntary but it became compulsory with new recruits joining in.</td>
<td>Newly recruited workers had never worked together before.</td>
<td>All newly hired workers joined the VCoP upon their arrival.</td>
<td>Members routinely use computers in their daily work.</td>
<td></td>
</tr>
<tr>
<td>Compulsory</td>
<td>Medium</td>
<td>Fluid</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>All members were selected by their department heads and asked to join.</td>
<td>Members used to collaborate occasionally before the VCoP’s existence.</td>
<td>Large turnover among members</td>
<td>Most members use computers in their work but computer usage may not be extensive.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Members’ ICT Literacy</th>
<th>Cultural Diversity</th>
<th>Topic’s Relevance to Members</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Most members don’t use computers in their work, and many of them do not have a computer at home.</td>
<td>Although all members are professionals in the same area, who share similar backgrounds, they work in very different types of organizations, with different modes of operations. They also hold different positions within their respective organizations.</td>
<td>The topic discussed in the VCoP is relevant to members’ daily work and core proficiencies.</td>
</tr>
<tr>
<td>High</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Members routinely use computers in their daily work.</td>
<td>Members are all technicians and engineers, but with different areas of expertise.</td>
<td>The VCoP is a means to exchange information relevant to members’ daily work; all members work on the same projects but on different schedules.</td>
</tr>
<tr>
<td>Medium</td>
<td>Homogenous</td>
<td>High</td>
</tr>
<tr>
<td>Most members use computers in their work but computer usage may not be extensive.</td>
<td>All members of the VCoP share similar backgrounds and have the same area of specialty.</td>
<td>The topic is at the core of members’ expertise.</td>
</tr>
</tbody>
</table>
Table 3 – Structuring Characteristics of Selected VCoPs (cont’d)

<table>
<thead>
<tr>
<th>Technological Environment</th>
<th>Degree of Reliance on ICT</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High</td>
<td></td>
<td>Although some members have occasionally met face-to-face, the work of the VCoP is conducted entirely using ICT.</td>
</tr>
<tr>
<td></td>
<td>Low</td>
<td></td>
<td>The members have face-to-face meetings every 2 weeks and rely on ICT for the rest of the information sharing.</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td></td>
<td>The work of the VCoP relies heavily on ICT; no face-to-face meetings have been organized.</td>
</tr>
</tbody>
</table>

| ICT Availability | Low variety | One single tool with limited functionalities. | Low variety | One single tool with limited functionalities. | Low variety | One single tool with limited functionalities. |
4.4 DIFFERENT CONFIGURATIONS CREATING DIFFERENT CHALLENGES

Although all these VCoPs were created in facilitating environments and had carefully chosen topics that were highly relevant to their members’ daily professional practices, their other structuring characteristics differed, which raised, as will be discussed, various challenges.

While VCoP A reached maturity (level of maturity = transformation) and fulfilled its objectives according to schedule despite resource scarcity (organizational slack = low), VCoPs B and C struggled with their own development. An important issue for VCoP B, which had not yet reached full maturity (level of maturity = maturing), was whether it could move past the pilot stage and guarantee a long-term commitment of resources from the organization. Its challenge was directly related to the organizational slack. The organization had a costly and strategic project underway which consumed most of its resources, therefore diminishing the capacity for the organization to support other projects such as the VCoP (organizational slack = low). Set in a well-endowed organization (organizational slack = high), VCoP C was not concerned with its resources on a short term basis. However, it had reached a certain level of maturity (level of maturity = stewardship) and its concern was the retention of members’ interest and participation despite the fact that they no longer received the kind of attention they had been given as participants in a new experiment. Resources on a long term basis also needed to be negotiated. VCoP A, on the other hand, fulfilled its predefined objective, but was never allowed to go to the next phase. VCoP A was created in a relatively poor context — dependant on external government funding agencies to secure resources to finance this type of special project. This search for resources had not yet succeeded and therefore the next phase of this VCoP was put on hold.

The three VCoPs were also different in terms of boundary crossing and member diversity. Both characteristics usually impact the level of cohesiveness within a community. On the one hand, VCoP A contained volunteers working for different employers and thus having very different working conditions and various expectations toward the community (boundary crossing = high; cultural diversity = medium). Some members did not have access to the electronic discussion forum used by the VCoP because their employers’ firewalls would not let them access it and could not be by-passed. This technical problem brought much confusion and impeded the full participation of some members; creative solutions had to be found to include these people in the VCoP despite their initial inability to access the system. Four members of this VCoP were also given additional resources by their respective employers (money, equipment, or time), while others did not receive anything. Therefore, the real-life experience of each member of this community was extremely diverse, making it more difficult to achieve a common vision and to build a high level of cohesiveness and engagement. However, despite this diversity, a high level of membership stability throughout the life of the community (membership = stable) allowed the participants to develop close relationships and build strong ties.

On the other hand, all members of VCoP B worked for the same company and therefore had similar working conditions (boundary crossing = low) which facilitated communication and exchanges. The challenge regarding membership in this community arose from the fact that the members came from different backgrounds (cultural diversity = medium). The community leaders had to work at developing a common language, at finding topics and common ways to proceed, and at managing the members’ different expectations in relation to the VCoP.
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In contrast, VCoP C had a rather homogeneous cultural group (boundary crossing = medium; cultural diversity = homogenous) composed of people from different departments from the same organization. Therefore, finding a common language and agreeing upon how to function was not a real challenge in this community.

In addition, contrary to VCoP A, VCoPs B and C both had some members who had been forced to participate in the community (members’ enrollment = mixed for VCoP B and compulsory for VCoP C). When a VCoP faces the challenge of integrating drafted members, the sense of purpose, engagement and participation may be much more difficult to achieve. Moreover, both VCoPs B and C had to continuously integrate new members who joined the community later in its life (membership stability = moderately stable for VCoP B, fluid for VCoP C). Under these circumstances, where topics, ways of doing, procedures, etc., are constantly negotiated, it may be more difficult for a VCoP to reach an effective level of trust and cohesiveness and attain its full speed. This is an accurate description of what happened to VCoP B. The uncertainty surrounding the end of their vital project was high since the final date was constantly postponed. New members were integrated to the VCoP, but not under the real conditions that would prevail when the strategic project would be finished. As long as the project was underway, the VCoP could not attain its full speed. Without the proper conditions coming from the organizational context and a stabilized membership, despite an initial period of success, motivation remained difficult to sustain in this VCoP, and it was much more difficult to reach a level of engagement and cohesiveness necessary for fruitful knowledge sharing.

The three communities described earlier also differed in terms of their degree of reliance on ICT, which may have had an impact on the level of cohesiveness, feeling of belonging, and sense of engagement of their members overall, affecting their levels of participation and satisfaction. Because VCoPs A and C were geographically dispersed (geographical dispersion = medium for VCoP A and medium-low for VCoP C), their members had to communicate mostly through ICT (ICT reliance = high); this contrasted with VCoP B, whose members were located in the same place (geographical dispersion = low), and therefore met face-to-face on a regular basis (ICT reliance = low). Ironically, this community had the most ICT literate members (ICT literacy = high), whereas members from VCoP A had no or little experience with ICT use (ICT literacy = low) and members from VCoP C were moderately literate (ICT literacy = medium). Heavy reliance on ICT may be a burden on the community members, especially when they are not used to interacting with technology. Lack of competence, lack of self-confidence, and resistance to technology may impede members’ participation in the community. The technological problems faced by VCoP A, as mentioned earlier, are another example of how heavy reliance on technology, especially in an environment that is not technology-friendly, may slow down the development of a community of practice. However, members’ prior community experience may alleviate some of the difficulties brought about by technology. The members of two of the communities described here, VCoPs A and B, didn’t know one another when the community started (prior experience = none), while the members of VCoP C had some experience of working together (prior experience = medium). Prior community experience may enhance the support one will receive from peers when using ICT and, because a certain level of trust already exists, may create an atmosphere where people can experiment with ICT and make mistakes.

Due to their different sets of characteristics, each community faced various challenges and they responded to these difficulties in different manners. VCoP A clearly faced the challenge of managing geographical dispersion and heterogeneity of experiences in a context characterized by
a lack of organizational slack. They tackled the problem in various ways. First, they found external resources (money) to build and support the community and to hire someone who would serve as a full time community leader. Second, because the organization recognized that the success of the community depended upon its relevance to its members, the early stages of the community were used for the identification of a specific topic and the definition of a deliverable with which all participants could identify, because it was relevant to their daily practice. Third, the community leader recognized individual differences and had many one-on-one phone interactions with members, ensuring that each individual situation was acknowledged and taken into account.

VCoP B’s challenge was to build both the credibility of this new mode of knowledge sharing, and the members’ motivation to participate, in a context where participation was mostly mandatory and the long-term commitment of resources unclear. In an effort to build motivation to participate, the leader of the VCoP organized face-to-face meetings to build some cohesion and trust among members. This motivation building effort must continue to, for example, show how members may individually benefit from their participation in the community. However, in a context of low organizational slack, the problem of receiving resources remains. Without a clear commitment from the organization, the permanence of this community was not guaranteed.

As far as VCoP C was concerned, the launching phase was a success which could be attributed to the topic’s high relevance to members and to the organization’s supportive environment. However, the community then faced its toughest challenge: it had to sustain members’ interest and participation when the initial honeymoon period was over. The organization faced this challenge by reinforcing the idea that a VCoP is a powerful tool for knowledge sharing.

Although this analysis draws from the individual experiences of only three communities of practice, it clearly shows that our typology helps in identifying the characteristics that differ among the various configurations of virtual communities of practice. Indeed, the three communities studied here, despite their similarities, clearly vary in accordance with some intrinsic structuring characteristics. The combinations of those characteristics make each VCoP unique. We have also shown that those structuring elements have an impact on the development and life of the three VCoPs. Being structurally different, these communities faced different challenges that had to be specifically addressed by their leaders and supporting organizations.

5. CONCLUSION

The main purpose of this article has been to further our understanding of virtual communities of practice. We have identified a typology that contains structuring characteristics on which such communities may vary and be compared, showing that not all VCoPs are similar, but that there are indeed different configurations of VCoPs. Using this typology to scrutinize three VCoPs, we have shown that different structuring characteristics lead to different strengths and challenges, which are best addressed by specific and contingent management practices. From this analysis, it is clear that “one-fits-all” advice is not appropriate and that specific characteristics are more likely to create challenges. Management decisions and actions have to be fine-tuned to counteract the negative impact of these specific structuring characteristics. Our investigation clearly shows that, in order to reach success, although many authors have tried to identify a set of best practices to manage VCoPs in order to ensure their success (Lesser & Everest, 2001; Wenger et al., 2002), those practices need to be contingent upon the basic structuring characteristics of the VCoP.
Building this typology was a first step at developing a finer understanding of VCoPs. Using and refining it will result in a clearer picture of this knowledge management practice. Its use should make easier the comparison of empirical findings, the accumulation of knowledge, and the formulation of sound advice for practitioners. This typology can also be used as a diagnostic tool to help managers estimate the level of complexity of their VCoPs (see Table 1). With inherently complex VCoPs, managers can choose to either reduce complexity (by changing, if possible, a specific structuring characteristic) or face it with appropriate actions. Future research should analyze the challenges that specific configurations of VCoPs are more likely to face and investigate the management decisions/actions that can be taken to assure the VCoP’s success in view of a particular configuration. In our view, such a contingent perspective to look at VCoPs is extremely relevant and much more promising, both from a research and a practical perspective, than treating VCoPs as a uniform phenomenon.

**BIBLIOGRAPHY**


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